

May 28, 1992

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MEMORANDUM

TO: State Water Division Directors

**FROM: Max H. Dodson, Director
Water Management Division**

SUBJECT: Guidance Regarding Water Quality Standards for Recreation

The purpose of this memorandum is to transmit to you final guidance concerning recreation standards and the Clean Water Act (CWA) Section 101(a)(2) "swimmable" goal (attached). This guidance is intended to supplement the national EPA guidance on this subject. In upcoming water quality standards triennial reviews, the Region will rely on the enclosed guidance in reviewing draft, proposed, and final State water quality standards for recreation.

The guidance describes four options for achieving compliance with "swimmable" requirements:

Option 1: Designate all waters of the State for primary contact recreation and establish an appropriate bacteriological criterion.

Option 2: Designate all waters of the State for primary contact recreation or secondary contact recreation, but establish a bacteriological criterion for all waters that is appropriate for primary contact recreation.

Option 3: Designate all waters of the State either primary or secondary contact recreation and apply a bacteriological criterion appropriate for primary contact recreation. Where non-human sources of fecal pollution are the cause of high densities of bacterial water quality indicators, bacterial criteria sufficient to support primary contact recreation may be applied with a rebuttable presumption that the indicator shows the presence of human fecal pollution. Rebuttal of the presumption is based on a sanitary survey which demonstrates a lack of contamination from human sources.

Option 4: Conduct and submit to EPA for review use attainability analyses (UAAs) for all waters where recreation standards are not consistent with the CWA Section 101(a)(2) goal.

In addition to describing the options to achieve compliance with "swimmable" requirements, the guidance also recommends a general process for application of recreation standards. Among the issues which are addressed include:

- . When should recreation standards be based on maintaining existing water quality?
- . When is a UAA required?

- . **Where a UAA is conducted, what factors should be considered?**
- . **What is an appropriate definition of primary contact recreation?**
- . **What bacteriological criteria should be applied?**

To prepare for the upcoming triennial review, the Region recommends that, where appropriate, each State document the procedure that is presently or will be followed in conducting recreational UAAs. Such documentation should include a brief worksheet of key factors which can then serve as documentation of the analysis findings. Guidance on relevant factors to consider in a recreational UAA is included in the attached. The Region will expect such documentation in future triennial review submittal packages for each water body segment where "swimmable" standards have not been applied. In most cases, however, the Region believes that a UAA will not be necessary and that, where a UAA is necessary, preparing the UAA will not prove to be a burdensome exercise.

I hope this guidance clarifies the Regional position with respect to recreation standards and that the guidance will prove to be useful to you in planning for and conducting the upcoming triennial review. If you have questions please call me at (303) 293-1542 or contact Dale Vodehnal, Chief, Water Quality Branch, at (303) 293-1565.

Attachment

**cc: State Water Quality Standards Coordinators
EPA Regional Water Quality Standards Coordinators
Dave Sabock, EPA-HQ**

**EPA Region VIII WQS Guidance:
Recreation Standards and the
CWA Section 101(a)(2) "Swimmable"
Goal**

May, 1992

**U.S. Environmental Protection Agency
Region VIII (8WM-WQ)
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**EPA Region VIII Guidance:
Recreation Standards and the
CWA Section 101(a)(2) "Swimmable" Goal**

I. INTRODUCTION

CWA Section 101(a)(2) establishes as a national goal that,

*wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife **and provides for recreation in and on the water** be achieved by July 1, 1983 (emphasis added).*

This provision has come to be known as the "fishable/swimmable" goal of the CWA. Accordingly, where a State's water quality standards for a particular waterbody contain designated uses that do not include these goal uses, the State is required by the federal water quality standards regulation at 40 CFR 131.10(j) to evaluate whether goal uses are attainable and to document the findings (i.e., with a use attainability analysis or UAA).

With regard to the swimmable component of this national goal, EPA recognizes that the physical characteristics (e.g., depth, flow) of some western waterbodies do not lend themselves to swimming and other forms of primary contact recreation. However, the general Agency policy on this issue is to place emphasis on the **potential** uses of a waterbody and to do as much as possible to protect the health of the public (see 48 FR 51401 and the Water Quality Standards Handbook at p. 1-6). In certain instances, the public will use whatever waterbodies are available for recreation, regardless of the flow or other physical conditions. Accordingly, EPA encourages States to designate primary contact recreation uses, or at least to require a level of water quality necessary to support primary contact recreation, for all waterbodies with the potential to support primary contact recreation.

This document summarizes the options available to States to satisfy the regulatory requirements that have resulted from the swimmable goal and makes recommendations on several key issues related to recreation standards.

II. FOUR OPTIONS

Options available to the States to achieve compliance with the requirements associated with the swimmable goal can be characterized as follows:

- Option 1:** Designate all waters of the State for primary contact recreation and establish an appropriate bacteriological criterion. This is the option that EPA recommends for the majority of surface waters.
- Option 2:** Designate all waters of the State either primary contact or secondary contact recreation, but establish a bacteriological criterion for all waters that is appropriate for primary contact recreation. EPA considers a secondary contact recreation use with a primary contact recreation criterion to satisfy the swimmable goal and the 40 CFR 131.6(a) requirement. This option may be appropriate for waters in which the regulatory authority does not want to encourage primary contact recreation, but believes that such activities may occur anyway.
- Option 3:** Where non-human sources of fecal pollution (i. e., agricultural, wildlife) are the basis for a State's reluctance to establish primary contact recreation uses or criteria, EPA encourages States to apply bacterial criteria sufficient to support primary contact recreation with a rebuttable presumption that the indicator shows the presence of human fecal pollution. Rebuttal of this presumption where criteria exceedences are measured must be based on a sanitary survey which demonstrates a lack of contamination from human sources. The basis of this approach is the lack of information and research demonstrating a relationship between bacterial indicators and swimming-associated illness in animal contaminated waters¹.
- Option 4:** Conduct and submit to EPA for review use attainability analyses (UAAs) for all waters where recreation standards are not consistent with the CWA Section 101(a)(2) goal. Such UAAs are required by Section 131.10(j)(1) of the water quality standards regulation.

1. See attached August 17, 1989 EPA memorandum from Al Dufour to Kent Ballentine.

III. RECREATION UAAS

A. Background

The water quality standards regulation includes a total of six factors that may be the basis for concluding that a use is not attainable (see 40 CFR 131.10(g)). These factors are as follows:

1. Naturally occurring pollutant concentrations prevent the attainment of the use;
2. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;
3. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;
4. Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use;
5. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or
6. Controls more stringent than those required by Sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

As discussed in the Introduction, EPA's general policy is to encourage application of swimmable goal standards (i.e., following option 1, 2, or 3) even where, based on physical factors, incidental human exposure associated with water recreation seems unlikely. Region VIII believes that this approach continues to make sense for the majority of surface waters.

Some have questioned whether existing EPA regulations and policies provide States with sufficient opportunity to ever conclude that swimmable goal standards are not attainable. For example, if physical factors are not to be considered, this seems to eliminate factors 2, 4, and 5 above. Further, factor 1 does not seem relevant because bacteriological criteria drive most recreation use decisions and, although information is lacking, human sources of fecal contamination are generally considered as the primary source of human health risk. Following this logic, Factor 3 also does not seem relevant because most, if not all, human sources of fecal contamination can be remedied if funds are available. This leaves only the economics factor (number 6), which is probably not broadly applicable because of the range of affordable disinfection options currently available. Situations involving failing septic systems or unmanned package plants are possible exceptions to this general conclusion.

Based on the above discussion, it could be concluded that most, if not all, surface waters should be assigned swimmable goal standards (i.e., following options 1, 2, or 3), and

there are fairly limited opportunities, under current regulations and guidance, for concluding that such standards are not attainable. Although assigning swimmable goal standards to all waters would clearly satisfy all requirements pertaining to recreation and fully protect human health, Region VIII recognizes that there may be some waterbodies where application of such standards may be unnecessary. For example, in situations where an evaluation of relevant factors indicates that existing and potential primary contact recreation uses cannot reasonably be presumed to exist, it may not be necessary or appropriate to set standards in support of the swimmable goal. Accordingly, the following is intended to provide some general guidance to assist States in establishing appropriate water quality standards for recreation. The Region is available and willing to work with interested States to develop State-specific procedures or policies.

B. The Region VIII Approach

1. Maintain and Protect Existing Water Quality

A primary consideration in establishing recreational standards should be to maintain existing high levels of water quality. In general, many waterbodies in Region VIII have sufficient water quality to support primary contact recreation uses. Where this is the case, the Region recommends that States set swimmable goal standards (i.e., designated use + bacterial criterion or the bacterial criterion alone) to ensure that water quality is maintained. The question of whether or not there is a potential for primary contact recreation need not be addressed specifically since the function of this approach is to protect an existing high level of water quality. This approach is particularly appropriate for waterbodies without human sources of fecal contaminants (i.e., point sources, septic systems, etc.).

A variety of factors support a presumptive application of swimmable goal standards. For example, the approach:

- 1) maximizes human health protection by presuming an incidental exposure pathway for a wide variety of waters;
- 2) maintains and protects existing high levels of water quality;
- 3) ensures that water quality standards describe a desired water quality condition for the water body;
- 4) presents little or no potential for unnecessary economic impacts to dischargers if applied appropriately;
- 5) allows the State to reduce the universe of water bodies subject to UAA requirements; and
- 6) encourages a formal sanitary survey program to identify significant public health risks.

2. Protect Existing and Potential Uses

Where presumptive application of swimmable goal standards cannot be justified based on existing water quality, States must determine whether primary contact recreation is an

existing or potential use. In most of these cases, recreation standards can probably be established without conducting a use attainability analysis. The Region believes that it makes sense to apply the primary contact recreation use broadly and, therefore, narrow the universe of waters where it will be necessary to conduct a UAA. However, where the need for a use attainability analysis arises (i.e., the existence of a potential incidental exposure route is uncertain or has been challenged), States should develop and apply a UAA procedure. The questions to be answered in conducting a UAA are as follows:

- . Is primary contact recreation an existing use for this waterbody?
- . Is primary contact recreation a potential use for this waterbody?
 - is the potential limited by water quality?
 - if so, are the water quality problems correctable?
 - is the potential limited by non-water quality factors?
 - if so, are those factors correctable or controllable?

A UAA procedure should allow the State to make defensible decisions about recreation standards, with public involvement, and based on an overall assessment that addresses all relevant considerations. The difficult UAA issue is deciding where the potential for primary contact recreation (including incidental exposure) is sufficiently limited to justify not setting a swimmable goal standard for the water body. In the case of potential uses, the decision must be based on consideration of a variety of factors affecting potential (e.g., access, flow, depth). Although physical factors such as flow and depth may be considered in conducting such assessments, physical factors should not be the sole measure of attainability. In general, the Region's position is that physical factors must be evaluated in combination with other relevant considerations.

The factors that should be considered in conducting a UAA include the following:

1. Existing recreational uses of the waterbody. If the waterbody is currently used for primary contact recreation, or is known to have supported such activities, primary contact recreation is an existing use and must also be a designated use for the segment (see 40 CFR 131.10).
2. Water quality characteristics of the segment, with particularly emphasis on bacterial indicators. An important aspect of this assessment is that, although information is lacking, only fecal contaminants of human origin are generally considered to pose human health risk. The Region supports presumptive application of swimmable standards in segments where bacterial quality is sufficient to support primary contact recreation, even if the physical conditions may not be ideal for such activities. In segments where there are no known human sources (as determined by a sanitary survey), the Region would again support presumptive application of swimmable standards, regardless of the bacterial quality resulting from non-human sources (i.e., Option 3 described above).
3. Access to the waterbody (e.g., roads, trails, exclosures). For example, if people are physically restricted from getting to the waterbody, this would help support a conclusion that establishing a swimmable goal standard is not required at present. On

the other hand, if access is provided (e.g., a trail is located adjacent to the waterbody), this increases the likelihood that the waterbody will be used for primary contact recreation. Because a critical function of water quality standards is to protect potential uses, access can be an important consideration in reaching a decision about recreational uses.

4. Facilities that support primary contact recreation activities (e.g., parks, boat ramps, beaches, etc.). For example, waters adjacent to park land should be presumed to have existing (or potential) primary contact recreation uses.
5. Location of the waterbody and its proximity to people (urban waters, for example, should typically be presumed to provide primary contact recreation opportunities).
6. Physical conditions sufficient to support primary contact recreation activities. Where physical factors substantially preclude total body immersion, and it is unreasonable to presume a potential incidental exposure route, physical factors may be the basis for concluding that swimmable goal standards are not attainable at present. The Region's general recommended approach is that segments that provide sufficient flow and depth for total body immersion (i.e., while in a prone position) should be presumed to provide opportunities for primary contact recreation, even where such flows are episodic, intermittent, or confined to areas that represent only a fraction of the overall segment. To fully protect human health, it is critical to evaluate physical factors in combination with the other factors described above. For example, physical factors should be evaluated differently for urban waters which are easily accessible to the public. Even for segments in more remote areas, if access to the waterbody is provided, it may be appropriate to establish swimmable standards if a portion of the segment provides sufficient flow and depth for total body immersion (e.g., a "swimming hole").
7. Costs associated with achieving compliance with swimmable goal standards (i.e., the substantial and widespread impact test in factor 6 of 40 CFR 131.10(g)). EPA is currently developing guidance on the use of this factor that will be added to the Agency's Water Quality Standards Handbook. Where the treatment costs associated with achieving swimmable goal standards would result in substantial and widespread impact, this would be a basis for concluding that such standards are not attainable. For waters where primary contact recreation is an existing use, a determination of substantial and widespread impact could not be used as a basis to conclude that swimmable standards are unattainable; however, in certain circumstances such a determination may form a partial basis for issuance of a temporary variance from swimmable requirements. Generally, the Region believes that treatment costs should be among the final considerations in determining and assigning recreation standards.

Where a UAA is conducted, and swimmable goal standards are determined to be unattainable, such decisions would be subject to the same triennial review requirements that apply to all water quality standards decisions. That is, some level of review would be required every three years to assure that the basis for the decision remains valid.

C. Summary

The Region recommends that swimmable goal standards be presumptively applied, except perhaps where the existence of a potential recreation-based human exposure route is uncertain or has been challenged. Options 1, 2, or 3 (described above) may be followed to establish recreation standards that EPA considers "swimmable." This should allow States to focus limited resources appropriately and fully protect the public against potential health risks associated with recreational activities. For segments where it is not reasonable to presumptively apply swimmable goal standards, States should develop and document the procedures for conducting a recreation use attainability analysis. Such procedures should probably include a worksheet of key factors (such as those discussed above) which can then serve as documentation of the analysis findings. Although physical conditions such as flow and depth may be considered in evaluating potential recreation uses, the Region's position is that these factors are to be used in combination with other factors such as existing uses, waterbody access, bacterial water quality, waterbody location, treatment costs, and the existence of facilities that encourage, or create a potential for, full body contact recreation. Several examples of recreational use decisions are attached to provide further explanation of the Region's recommended approach.

IV. DEFINITION OF PRIMARY CONTACT RECREATION

EPA Region VIII recommends that States define this term to include swimming and other activities that potentially involve total body immersion and/or incidental water exposure. Such activities include, but are not limited to, rafting, wind surfing, canoeing, tubing, kayaking, scuba diving, snorkeling, and water-skiing. There are several factors supporting this position. First, one of the fundamental purposes of water quality standards is to protect human health. Clearly, limiting primary recreation uses to waterbodies where swimming occurs does not serve this purpose because there are other activities that pose appreciable risk of incidental exposure to pathogens. Second, there is no basis to conclude that Congress intended to limit the Section 101(a)(2) goal to waters where swimming occurs. The Act specifically uses the phrase "in or on the water" to describe recreational activities that are to be addressed. Based on these considerations, the Region strongly recommends that States define primary contact recreation broadly, to include a full range of activities that may result in incidental exposure.

V. RECOMMENDED BACTERIOLOGICAL CRITERIA

EPA Region VIII recommends that States begin the process of switching to one of the two indicator organisms and associated criteria provided in EPA's 1986 bacteriological criteria guidance. The Region believes that the evidence clearly shows that either E. coli or enterococci are better indicators than fecal coliforms, based principally on their correlation with incidence of gastroenteritis in swimmers. At a minimum, States should begin collecting data on these alternative indicators to support future adoption into State regulation.

The Region also recommends that, regardless of which indicator is selected, the criterion be applied with a rebuttable presumption that the indicator shows contamination of human origin (i.e., Option 3). The basis of this approach is that currently available

information on the human health risk of non-human fecal contamination is insufficient as a basis for regulatory controls. Accordingly, States should focus on controlling human sources and treat bacterial criteria exceedences as indicators of potentially uncontrolled human sources. To address criteria exceedences, States should establish and implement a routine sanitary survey procedure. Where such a survey identifies no human sources of contamination, the "human sources" presumption may be considered overcome and the criterion satisfied. Where the survey identifies human sources that are not adequately controlled, the criteria may then be used as a basis for establishing controls.

It should be noted that the presumption of no human health risk attributable to non-human fecal sources may be subject to further study in the future. If and when such research refutes or calls into question the basis for the above policy, EPA's recommended approach for non-human fecal sources may be revised. However, based on currently available data, Region VIII believes that the above recommendation provides a reasonable approach to establishing and implementing bacteriological water quality criteria.

EXAMPLE RECREATIONAL USE DECISIONS

Example 1: A small headwater mountain stream segment unaffected by human sources of fecal contamination has no known existing recreational uses. Animal sources result in occasional exceedences of the primary contact bacterial criteria, but data are limited. Access to the segment is extremely limited. There would be no treatment costs associated with swimmable goal standards because there are no point sources on the segment. Physical conditions (temperature, flow, depth) are not conducive to swimming (and swimming may be dangerous), but occasional pools of sufficient depth for total body immersion exist.

DECISION: Apply a secondary contact recreation use and a criterion sufficient to support primary contact recreation, with a rebuttable presumption that the indicator shows contamination of human origin.

Example 2: An urban river segment consisting primarily of municipal effluent supports frequent kayaking. Bacterial indicators significantly exceed criteria for primary contact recreation (contamination is of human origin). Access to the waterbody includes walking and biking trails that run adjacent to the river. Park land also exists adjacent to river. Although some treatment costs would result from applying swimmable goal standards, such costs would not result in substantial and widespread impact. The physical conditions are not ideal for swimming, but a number of pools sufficient to support total body immersion exist on a reoccurring basis.

DECISION: Apply primary contact use (an existing use in this case) and criteria sufficient to support that use.

Example 3: A plains stream segment receives effluent from a small POTW. Although treatment costs would result from applying swimmable goal standards, such costs would not pose substantial and widespread impact. Existing uses are unknown. Access to the stream and the stream's proximity to a housing development creates a potential for primary contact recreation.

DECISION: If pools sufficient for total body immersion exist (a swimming hole), swimmable goal standards should be proposed. If pools do not exist, application of such standards may be unnecessary. Public input should be sought in either case.